



STAN-EVAL NOTES
CIVIL AIR PATROL VIRGINIA WING
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REACT on Takeoff: IFR Magazine had an interesting article on the acronym REACT which is useful during takeoff. We all do a careful preflight and follow the before takeoff checklist prior to takeoff. But once on the runway and before liftoff, the REACT acronym provides a useful and practical way to monitor the takeoff and help in the decision for aborting the takeoff.

The R is for RPM and manifold pressure. When the throttle goes forward check for power output. For our C182 and GA8 aircraft, RPM should be 2400 (C182)/ 2700 (GA8) and MP should be close to the field barometric pressure. For our C172 aircraft, the RPM should be the static RPM (e.g. RPM when the aircraft is not moving or moving slowly). The static RPM is part of the TCDS but is around 2300 RPM for most C172's. If RPM or manifold pressure is not where it should be, abort and figure out what's wrong. Note that the published static RPM is for sea level, so in high density altitude conditions, expect less (and you know how to calculate less, right?).

The E is for engine instruments. Check to be sure they are all in the green. If not, abort and figure out why not.

The A is for airspeed. Airspeed should be alive and indicating properly. If not, abort and figure out why not.

C is for centerline. Keep the aircraft on the centerline. If you are unable, you have a problem with directional control either due to an excessive cross wind or some mechanical issue. Either way, abort and figure out what's wrong.

T is for takeoff. As part of the pre takeoff briefing, you have a predetermined point on the runway by which time you should be flying. If you reach this point and you are not flying, abort and figure out what's wrong. For most runways that we use, determining a takeoff point where we will abort if not flying is straight forward. We simply take the calculated takeoff distance with some margin (multiplying it by two is a good conservative estimate). However, for very short runways, the chosen takeoff point may not allow an abort without running off the runway (multi-engine pilots – think accelerate/stop distances). It takes discipline to abort a takeoff knowing you are going to bend metal. So choose your takeoff point carefully on short runways. But aborting a bad takeoff is usually better than trying to get airborne when there is a serious problem.

For CAP, the acronym REACTT might be better where the second T is for transponder. Especially in the SFRA, we need to check to see that we are squawking altitude once in the air.

Tail Strike (LtCol T. Carey): You're on short final after a 2.7 hour IFR relocation sortie. Dodged some buildups along the way, enjoyed the precision of an automated GPS approach to visual conditions. The end of an almost flawless sortie is mere seconds away. You'd noted a .6% down slope and a bit narrower runway than normal during your flight planning, but you've handled these conditions without problems for years.

Only this time you flare a little high, freeze the yoke to avoid the balloon, and hold the nose up looking for that satisfying gentle touchdown. ("Are we down yet?") But the runway is dropping away from you as you float in the landing attitude for 7 or 8 seconds. A hint of stall horn as you touch down – not a roller, but not bad.

It's not until you're tying the plane down that you see the bent tail tie down loop! Looking back at the runway from the ramp, you can clearly see the down slope – about 5 feet lower in that 8-second flare, which had already started several feet too high. NEXT TIME – you'll pay a lot more attention to touchdown-zone runway slope; because you'll never forget the day you did a taildragger landing in a tricycle-gear airplane.

Filling out the e104: With the advent of WMIRS and the electronic entries of sorties, we all need to consider how to fill out an e104 properly. Many pilots question the value of an e104 for a C17 proficiency flight but every flight in CAP is a mission, even a proficiency flight. Many pilots also fill in the e104 after the flight is completed but we really should partially fill in the e104 prior to flight – more on that later. What information we provide and how much depends on the actual mission. An e104 for a C17 flight requires very few items in but some are always required no matter what the mission. WMIRS does try to make things a bit easier by pre-filling the e104 with information from the sortie including the date of the mission, estimated departure time, names of the crew, estimated time enroute, the aircraft, and reason for the flight.

The purpose of the 104 is to document both the preparation for a mission sortie and the results of a mission sortie. We still use the paper version at a mission base but they eventually are loaded into WMIRS. The reason a mission base may use the paper version is for continuity of operations during power failures or inability to connect to WMIRS. E104's are subject to audit so it's important to make sure they are reasonably accurate representations of a sortie.

Some entries are always required including:

- Date of the flight
- Mission Number
- Mission Symbol
- Sortie Number
- AC CAP number
- PIC and all crew members
- Objective
- Actual start and stop times (hobbs and tach)
- Flight release officer name

For certain types of missions, someone's life may depend on how well the e104 is filled in so don't take it lightly. It forms an official record for missions and critical decisions may be based on what is in the e104. An e104 consists of two main parts. The first part consists of information needed prior to a sortie while the second part consists of information documenting the sortie after completion

The first part should be completed prior to the flight and includes these sections. If you are operating out of a mission base, chances are the AOB has filled in most of this for you. But absent that, you are expected to fill this in:

- Mission Data Section: Documents the mission number, name, symbol and is always required
- Manifest, Qualifications and Aircraft Details: Lists crew members (always required), their qualifications and information about the aircraft (at least the tail number and call sign is required but it's also a good idea to include fuel on board).
- Releasing Officers: Always required
- Briefing Information: This area has a lot of information that can be filled in mostly applicable to HLS, CD, and SAR/DR missions. However some items should be filled in for any sortie. Items such as origin, destination, ETD, ETE, sortie objectives, route of flight and hazards to flight always make sense to fill in. Even for a C17 this is a good place to note things like TFR's to avoid or special procedures that will be followed. Certain missions would contain extensive notes on the sortie and how it is to be executed. This also documents whether a Tactical Risk Matrix was completed and whether a flight plan will be filed.
- Crew Notes: This is a text area that crews can insert information they may need for the sortie. A C17 might not use this space but a SAR/DR mission certainly will. For example, this might include a W&B or note equipment that is not operable.

The second part is filled at the completion of the sortie and includes the following section:

- Debriefing: This consists of fill in the blank sections such as start and stop times, gallons used and so forth but also includes text areas to summarize the sortie, weather conditions, and any remarks. For any sortie, all of the fill in's are required but the rest is optional. However, experience has shown that it's wise to note in the text areas that the aircraft was re fueled (or not) and that it was properly tied

down. Any discrepancies should be noted as well. For certain missions, this may be augmented by a 104a or a 104 b as appropriate.

- **Debriefing Officers:** For certain missions, this notes who the debriefing officer was. If you are operating out of a mission base, the debriefing officer may be filling this in for you. For C17's and other simple missions, the FRO is the debriefing officer (you called the FRO at the end of the flight, right?).

Incorrect entries in an e104 can cause untold problems for us. Endless hours of frustrating effort have been spent in the past on trying to reconcile entries in e104's. A simple mistake in hobbs, tach, gallons of fuel, and cost of fuel just to name a few wreak havoc in the system and requires long hours of staff time to figure out. And if what you put in the airplane log doesn't match what is in the e104, the earth will quit turning and tumble from orbit. So it's important to check and recheck your entries. Typos are easy to make especially at the end of a long day. If possible, get one of your crew members to cross check just to be sure everything is accurate and appropriate.

Automation Concerns (aka slaves to the magenta line): Recent accidents such as the 2009 Colgan crash and the loss of Air France 447 have caused much thinking about the darker side of automation. Although our CAP fleet does not have all the automation found in many airliners, we must be sure to keep up our stick and rudder skills and not become over reliant on automation. A significant portion of our fleet is glass with sophisticated autopilots – specifically the G1000/GFC700. The G1000 has become a very useful tool for CAP crews and has increased overall effectiveness. But there is the concern that pilots will or have become over reliant on this automation. We have a wonderful way to ensure this doesn't become an issue for CAP – it's the Form 5 check ride. Properly conducted, a Form 5 demonstrates basic stick and rudder skills allowing the check pilot to confirm that the pilot being examined really has the necessary skills. A check pilot can also determine if the pilot can remain effective without automation by examining both dead reckoning and pilotage skills. Instructor pilots should also emphasize basic airmanship whenever they are instructing in CAP.

Form 5/ Form 91 Check ride Trends: For the period January through June 2011, VAWG conducted 57 check rides (46 Form 5 and 11 Form 91). In the 57 check rides we had only one failure. Our very own Capt John Karanikas gave 17 check rides during that six month period!

Safety trends for VAWG: Although VAWG enjoys a good safety record, there are areas where we clearly need to improve. We have had two tail strikes over the past year in C182 aircraft. Although both were minor incidents in that no one was hurt and the aircraft were quickly restored to operational status, the cost was thousands of dollars to CAP. Tail strikes are surprising as the C182 has a reputation for landing on the nose gear, not the tail. We also suffered incidents of hanger rash. Again, these were minor incidents in that no one was hurt, but again the cost to CAP was in the thousands. Another area is flat spots on tires which is a sign of heavy feet on the brakes incurring more costs. Monitoring tire pressures is important. Under inflated tires are more prone to flatting and degrade takeoff performance. . Every VAWG a/c has a tire pressure gauge so there is no excuse for operating with low tire pressure.

The CAP FY11 Mishap review contained some useful observations and recommendations on national trends that aircrews should consider.

- **Flat Tires – Controllable –** This is related to crew proficiency on aircraft brakes. Typically too much pressure, foot attire that cannot sense pressure, or inexperience. It is recommended that a good flight instructor demonstration be given to crews on short field landing capabilities without brakes. If the landing is too fast, practice a go-around.
- **Wing Strikes while operating aircraft** was a high emphasis resulting in a Safety Alert; however recently, ground handling mishaps have increased. The biggest concern is getting aircraft into and out of hangars. It is recommended that aircraft be moved by full crews as much as possible, but hard stationary objects in hangars should be padded or protected in case an aircraft inadvertently comes in contact. Trailing edge and corner foam guards with "Remove Before Flight" streamers could be installed on ALL CAP aircraft that are in the hangar as an alternative.
- CAP has lost four aircraft this year due to weather related mishaps. Additionally two hangars were destroyed by storm winds. This highlighted the need to understand what approved ropes should be used to tie down aircraft and to ensure that ropes are tied tight to prevent the aircraft from "flying" off

the ground during storms. Additionally, if storms are forecast, it is better to store aircraft inside or to relocate aircraft to an area where severe storms will not have an impact. Lastly, ALL personnel need to know where appropriate storm shelters are. Thin aluminum hangars have proved NOT to meet that need, resulting in injuries of CAP members.

- Ground movement and ground handling of aircraft has surfaced again this year as a top cause for aircraft damage. It is recommended that all potential impact surfaces of the aircraft be protected with foam padding before moving aircraft. Also, wing clearance streamers, like a tennis ball that marks the parking stop point of personal auto garages, could be used to show wing clearances in hangars. Permanently fastened chocks to the floor would also assist in tail protection when pushing aircraft into the hangar. Use of all crew and ground members is necessary to ensure safety movement of aircraft.

What Are Runway Status Lights? (Courtesy of the FAA): Runway Status Lights (RWSL) are a series of red in-pavement lights that warn pilots of high-speed aircraft or vehicles on runways. They operate independently of Air Traffic Control. Runway Status Lights have two states: ON (lights are illuminated red) and OFF (lights are off) and are switched automatically based on information from the airport surface surveillance systems. RWSL will improve airport safety by indicating when it is unsafe to enter, cross, or takeoff from a runway. The RWSL system has two types of lights. Runway Entrance Lights (RELs) are installed at taxiways and Takeoff Hold Lights (THLs) on runways. Runway Entrance Lights (RELs) are a series of red in-pavement lights spaced evenly along the taxiway centerline from the taxiway hold line to the runway edge. One REL is placed before the hold line and one REL is placed near the runway centerline. RELs are directed toward the runway hold line and are oriented to be visible only to pilots entering or crossing the runway from that location. RELs that are ON (illuminated red) indicate that the runway ahead is not safe to enter or cross. Pilots should remain clear of a runway when RELs along their taxi route are illuminated. Lights that are off convey no meaning. The system is not, at any time, intended to convey approval or clearance to proceed into a runway. Pilots remain obligated to comply with all ATC clearances, except when compliance would require crossing illuminated red RELs. In such a case, the crews should hold short of the runway for RELs, contact ATC, and await further instructions. The Takeoff Hold Light (THLs) system is composed of red in-pavement fixtures in a double row on either side of the runway centerline lighting. Fixtures are focused toward the arrival end of the runway at the "Line Up and Wait" point and extend in front of the holding aircraft beginning 375' beyond the runway threshold and extending for 1,500'. Illuminated red lights provide a signal, to an aircraft in position for takeoff or rolling, that it is unsafe to takeoff because the runway is occupied or about to be occupied by another aircraft or ground vehicle. THLs that are ON (illuminated red) indicate that the runway ahead is not safe to takeoff. Pilots should refuse takeoff clearance if THLs are illuminated. Red THLs mean do not takeoff. Whenever a pilot observes the red lights of the THLs, the pilot will stop or remain stopped. The pilot will contact ATC for resolution if any clearance is in conflict with the lights. Lights that are off convey no meaning. The system is not, at any time, intended to convey approval or clearance to takeoff. Pilots must still receive an ATC clearance to takeoff. RWSL are in operation at DFW, SAN, LAX, BOS, and MCO. The system will be operational at PHX, IAH, SEA, IAD, and LAS in 2012 and will be installed at 23 major airports nationwide by 2016. Pilots are encouraged to learn more about RWSL at: http://www.faa.gov/air_traffic/technology/rwsl/

The Round out (Courtesy of the FAA): The round out in a small airplane is a slow, smooth transition from a normal approach attitude to a landing attitude, gradually rounding out the flight path to one that is parallel with, and within a very few inches above, the runway. If you flare while the airplane is drifting or in a crab, it will contact the ground while moving sideways. This can impose extreme side loads on the landing gear, and if severe enough, may cause structural failure. The most effective method to prevent drift in primary training airplanes is the wing-low method. This technique keeps the longitudinal axis of the airplane aligned with both the runway and the direction of motion throughout the approach and touchdown. We encourage you to visit this topic in more depth in Chapter 8, Approaches and Landings, in the Airplane Flying Handbook, which is available online at www.faa.gov. The direct link is: http://www.faa.gov/library/manuals/aircraft/airplane_handbook/media/faa-h-8083-3a-4of7.pdf

Articles for the VAWG Stan Eval Newsletter: We are always looking for brief articles of interest to VAWG pilots to include in this newsletter. CAP has many very experienced pilots and aircrew who have useful techniques, experiences, and tips to share. Please send your contribution to steve.hertz@ngc.com. If your article is accepted, you will get a pro rata share of the VAWG Stan Eval Newsletter subscription fees.